

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

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| Applicant's or agent's file reference 2002P19478WO | FOR FURTHER ACTION See Form PCT/PEA416 | |
| International application No. PCT/US2004/010176 | International filing date (day/month/year) 01.04.2004 | Priority date (day/month/year) 04.04.2003 |
| International Patent Classification (IPC) or national classification and IPC C04B35/64, B29C67/00 | | |
| Applicant SIEMENS AKTIENGESELLSCHAFT et al. | | |
| <p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> <i>sent to the applicant and to the International Bureau</i> a total of sheets, as follows:</p> <ul style="list-style-type: none"> <input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions). <input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box. <p>b. <input type="checkbox"/> <i>(sent to the International Bureau only)</i> a total of (indicate type and number of electronic carrier(s)), containing a Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> <p>4. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Box No. I Basis of the opinion <input type="checkbox"/> Box No. II Priority <input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability <input type="checkbox"/> Box No. IV Lack of unity of invention <input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement <input type="checkbox"/> Box No. VI Certain documents cited <input type="checkbox"/> Box No. VII Certain defects in the international application <input type="checkbox"/> Box No. VIII Certain observations on the international application | | |
| Date of submission of the demand 31.01.2005 | Date of completion of this report 17.06.2005 | |
| Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465 | Authorized Officer Sala, P Telephone No. +49 89 2399-8568 | |



INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/US2004/010176

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
 - This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:
 - international search (under Rules 12.3 and 23.1(b))
 - publication of the international application (under Rule 12.4)
 - international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

Description, Pages

1-5 as originally filed

Claims, Numbers

1-16 as originally filed

Drawings, Sheets

1/1 as originally filed

- a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. The amendments have resulted in the cancellation of:
 - the description, pages
 - the claims, Nos.
 - the drawings, sheets/figs
 - the sequence listing (*specify*):
 - any table(s) related to sequence listing (*specify*):
4. This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
 - the description, pages
 - the claims, Nos.
 - the drawings, sheets/figs
 - the sequence listing (*specify*):
 - any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | |
|-------------------------------|-------------|------|
| Novelty (N) | Yes: Claims | |
| | No: Claims | 1 |
| Inventive step (IS) | Yes: Claims | |
| | No: Claims | 1-16 |
| Industrial applicability (IA) | Yes: Claims | 1-16 |
| | No: Claims | |

2. Citations and explanations (Rule 70.7):

see separate sheet

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Re Item V.

The following document is referred to in this communication:

D1 : US 5 837 960 A (BARBE MICHAEL R ET AL) 17 November 1998 (1998-11-17)

Claim 1:

D1 discloses a process for producing shaped articles from powders by laser production (see D1, claim 1). The produced articles can have regions with dissimilar properties obtained by variation of a parameter during the laser production (see D1, column 4, lines 16-21, column 21, line 39 to column 22, line 8 and column 25, lines 41-50).

The subject-matter of claim 1 is distinguished, at least formally, from the disclosure of D1 in that the powder is a ceramic powder (D1 preferably uses metal powders) and the laser sinters the powder (in D1 the laser melts the powder).

However, it is noted that the process of D1 is not limited to metal powders (see D1, column 1, lines 19-23) and the carbides or borides mentioned in D1, column 21, line 44 can be regarded as ceramic materials. It is also noted that the melting in D1 is not necessarily complete (see D1, column 22, lines 4-8), so that the "melting" can in fact be equivalent to "sintering".

It appears therefore that the subject-matter of claim 1 is not novel, or at least not inventive, in view of D1.

The Applicant contested this conclusion during the examination.

The arguments which were submitted were essentially based on stressing the fact that D1 is concerned with metal processing by melting, whereas by contrast, the application is concerned with ceramic processing by sintering and on emphasizing the differences which distinguish the sintering process from the melting process. These arguments were not convincing because, as already noted, when in D1 an article with variable density is produced the melting is not complete (column 22, lines 1 to 8) and because according to the application a liquid phase can be produced (page 3, line 9). It follows that no clear distinction can be drawn between incomplete melting (as in D1) and liquid phase sintering (as in the application). It is also noted that D1, as already indicated, is not only concerned with metals and that the application is not only concerned with ceramic. In fact, the only

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concrete composition disclosed in the application (page 4, lines 23-225) is a ceramic alloy composed of silicon nitride powder (a ceramic powder) and yttrium powder (a metal powder) providing liquid phase sintering, in which presumably the yttrium metal melts.

Claim 12:

D1 discloses the fabrication of dies (see D1, column 4, line 9). Since a mold appears to represent an obvious alternative for a die, it appears that the fabrication of a mold having regions with dissimilar properties is an obvious possibility in view of D1. It appears therefore that the subject-matter of claim 12 is not inventive in view of D1.

The Applicant contested this conclusion during the examination.

The arguments which were submitted were essentially based on stressing the fact that the passage of D1 refers to "fixtures for use in conventional high volume production of articles" which cannot be identified with the mold as defined in claim 12. This arguments was not convincing. The claim does not specify any particular shape, specific composition or use for the mold. The examiner maintains therefore his conclusion that a mold can be understood as a "fixture for use in conventional high volume production of articles" because a mold can be used many times.

Dependent claims:

Dependent claims 2-11 and 13-16 do not appear to contain any additional features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT with respect to novelty and/or inventive step, the reasons being as follows: these features are either explicitly or implicitly disclosed in D1 or appear to represent obvious possibilities.